

AMENDMENTS TO THE DRAWINGS:

The attached sheet of drawings includes changes to
Figures 1a-1c.

Figures 1a-1c are amended to include a legend "Prior
Art".

Attachment: Replacement Sheet(s)

REMARKS

The application has been amended and is believed to be in condition for allowance.

Claims 15-22, 24, and 26-28 remain in this application. Claims 23 and 25 are canceled without prejudice.

Claims 15-22, 24, and 26-28 are amended to address antecedent basis issues and minor formal issues in consideration of U.S. practice and preferences. Claim 15 and 26 are further amended as indicated below. The amendments to the claims do not introduce new matter.

The specification is amended to include section headings; this amendment to the specification does not introduce new matter.

Formal Matters

The Official Action objected to Figures 1a-1c, stating that they should include a legend designating them as prior art.

Accordingly, Figures 1a-1c are amended to include a legend "Prior Art" in conformance with U.S. practice. The amendments to the drawing figures do not introduce new matter. Withdrawal of the objection to the drawing figures is respectfully solicited.

The Official Action objected to claim 26 for an antecedent basis issue, stating that the phrase "said channels" should be revised to read "said passages".

In reply, claim 26 is amended as above to obviate the Official Action's objection. Withdrawal of the objection to claim 26 is respectfully requested.

Substantive Rejections

The Official Action rejected claims 15-28 under 35 USC 103(a) as being unpatentable over Berg et al. (US 4,364,761; "BERG").

In reply, it is firstly noted that claim 15 has been amended with the subject matter of dependent claims 23 and 25. Accordingly, claims 23 and 25 have been canceled as stated above.

It is respectfully submitted that BERG fails to teach or suggest the invention recited in amended claim 15 for at least the following reasons.

The Examiner identifies Figures 5k-5p as teaching a ratio of asymmetry of undulation being between 5 and 20%. However, it is respectfully submitted that "figures 5a-k, m, n, and p are fragmentary schematic cross sectional views," (column 2, lines 4 to 5; emphasis added). A dimension or a ratio of dimensions should not be inferred from such schematic drawings, unless they are unambiguous.

For a characteristic to be regarded as disclosed by a drawing, it should be regarded as necessary that the characteristic be directly and fully inferred, without any ambiguity, from the drawing by a man skilled in the art.

BERG does not teach or suggest a ratio of asymmetry ranging between 5% and 15%, as required by amended claim 15. On the contrary, the geometries of the cross sections of several embodiments described in BERG imply much higher ratios of asymmetry. For instance figures 5h, 5i, and 5j, suggest ratios of asymmetry of about 50%.

At best, BERG only suggests creating asymmetry to increase the filtering area (column 7, line 22) or to maintain a large effective flow area of the inlet passages when the soot has been accumulated in them (column 7, lines 34 to 41). To obtain these technical effects, the man skilled in the art would thus be led to very high ratios of asymmetry, such as those of figures 5h, 5i and 5j.

It is therefore respectfully submitted that BERG neither teaches nor suggests all the features recited by claim 15.

In addition, it is respectfully submitted that the characteristics of a filter unit according to the invention represent an optimal compromise well beyond the scope of routine experimentation.

In particular, to determine this compromise, it was necessary to simultaneously test the four criterias which are listed on page 7, lines 5 to 10. Testing merely one of these criterias would have not have led the man skilled in the art towards the claimed invention.

For instance, considering only the measured time to achieve a head loss of 150 mbar on a clogged filter unit (10th column of Table 1 of the specification) would have led one of skill to the conclusion that example 10, which is not recited by claim 15 ($r = 4.223$), is superior to examples 2, 8 and 13, which are covered by claim 15.

In the same way, considering only the initial head loss (11th column of Table 1) would have led one of skill to the conclusion that example 14, which does not match claim 15 (filtering area of $0.696 \text{ m}^2/\text{l}$), is preferable to examples 2, 4, 8 and 13 which are covered by claim 15.

In fact, the initial head loss (11th column of Table 1) is almost always increased with the ratio of asymmetry. Considering the problem of head loss would have led one of skill to at least a low ratio of asymmetry or even to a very low ratio of asymmetry, as according to example 12.

Furthermore, considering the measured time to achieve a head loss of 150 mbar on a clean filter unit, (8th column of Table 1) would have led one of skill to the conclusion that example 6, which is not recited by claim 15 ($r = 4.223$), is preferable to example 13, which is covered by the invention as claimed. In addition, the examples 14 and 15 show that ratios of asymmetry of 10% may lead to very poor results.

A comparison between examples 10 and 12 shows that the different parameters may evolve in opposite directions.

These results confirm that routine tests on one criteria were not enough to find the optimal compromise of the invention claimed.

Thus, the claimed invention is the result of modifications to a plurality of specific parameters and complex criteria to obtain the optimal compromise to limit the regeneration operations. This work has nothing to do with routine tests.

The present description confirms that this work was not obvious.

Contrary to the teaching of BERG, which suggests increasing the filtering area (column 7, line 22), and as explained at page 8, line 1 to line 6 of the present description, a lower filtering area may lead to better results as far as head loss is concerned, provided said ratio r is higher. A comparison of the Reference example with example 15 shows, for example, that better performances may be obtained with a lower filtering area on a clogged filtering unit. According to the invention, a compromise had first to be found between the ratio r and the filtering area so that, "between two regenerations, the head loss induced by the filter body increases more slowly" (page 8, lines 14 and 15). However, this compromise should not be made so as to increase the ratio of asymmetry excessively (page 8, lines 21 to 23). It should also not be made so that the hydraulic diameter of the outlet passages is too small (page 9, lines 8 to 11).

Further, the examples 1 to 3 or 4 to 6 or 8 to 10 show that increasing the ratio of asymmetry very quickly diminishes the outlet passages hydraulic diameter. An increase of the ratio of asymmetry may also lead to an increase of the ratio r such that it does not belong anymore to the claimed range (see the examples 6 and 10 of Table 1). Example 14 demonstrates that the claimed range for the hydraulic diameter of the outlet passages is a very sensitive parameter. Indeed, although the ratio r , the filtering area, and the ratio of asymmetry of example 14 are within the claimed corresponding ranges, the hydraulic diameter of 1.88 has a very bad effect on the performances of the filter unit.

The claimed parameters may therefore be sensitive to modifications of the other parameters. The claimed ranges may therefore be regarded as "narrow" and optimal, and are neither taught nor suggested by BERG.

Reconsideration and withdrawal of the rejection are respectfully requested.

From the foregoing, it will be apparent that Applicant has fully responded to the August 20, 2008 Official Action and that the claims as presented are patentable. In view of this, Applicant respectfully requests reconsideration of the claims, as presented, and their early passage to issue.

In order to expedite the prosecution of this case, it is requested that the Examiner telephone the attorney for

Applicant at the number set forth below if the Examiner is of the opinion that further discussion of this case would be helpful.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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JGM/jr

APPENDIX:

The Appendix includes the following item(s):

- ☐ - a terminal disclaimer
- ☐ - a 37 CFR 1.132 Declaration
- ☐ - a new or amended Abstract of the Disclosure
- ☒ - A Replacement Sheet for Figures 1a-1c of the drawings
- ☐ - a Substitute Specification and a marked-up copy of the originally-filed specification
- ☐ - a verified English translation of foreign priority document